DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name:	**National Forge Company**
Facility Address:	**Route 6, Irvine, Pennsylvania 16329**
Facility EPA ID #:	**PAD 002 101 418**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

_X_ If yes - check here and continue with #2 below.

____ If no - re-evaluate existing data, or

____ if data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	x			Detections of polynuclear aromatic hydrocarbons (PAHs),acenaphthene, anthracene, fluorene, phenanthrene, and pyrene
Air (indoors)[2]		x		Records show no present evidence of contamination.
Surface Soil (e.g., <2 ft)		x		Contaminated soil excavated during closure of SWMUs.
Surface Water		x		Surface water samples indicate no exceedances for constituents of concern.
Sediment		x		Sediment samples indicate no exceedances for constituents of concern.
Subsurf. Soil (e.g., >2 ft)	x			Subsurface soil is currently capped or will be capped in place as part of the landfill closures.
Air (outdoors)		x		Records show no present evidence of contamination.

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Groundwater:
The onsite groundwater plume consists of mineral/cutting oil, quenching oil and No. 2 fuel oil. The five dissolved constituents of concern are polynuclear aromatic hydrocarbons (PAHs), acenaphthene, anthracene, fluorene, phenanthrene, and pyrene. The cause of the groundwater contamination was due to past releases from the underground process flow-through tanks and the aboveground fuel storage tanks. In December 1995, NFC initiated the pump and treat/recovery system to recover free-phase product and to control groundwater plume migration. After years of pump and treat, the groundwater concentrations for the constituents of concern achieved Pennsylvania Act 2 non-residential Statewide Health Standard and Site-specific Standard. The nearest residential wells are located upgradient from the onsite groundwater plume. Therefore, there are no human exposures to the plume.

In addition to monitoring the onsite groundwater plume, NFC conducts groundwater monitoring as required by PADEP for the closure of the Slag and Electric Arc Furnace (EAF) Dust landfills. Historic groundwater data from these wells indicate no constituents of concerns above the regulatory levels. *(NFC Environmental Inspection Report March 2002)*

Surface Water:
NFC discharges treated facility process wastewater and stormwater run-off to the Brokenstraw Creek under the National Pollutant Discharge Elimination System (NPDES) Permit. Historic surface water samples indicate no exceedances for constituents of concern in surface water. All applicable VOCs and SVOCs were below the acceptable detection levels. The majority of the selected metals were non-detect. Detected metals include iron (140 ug/l), magnesium (6530 ug/l), manganese (113 ug/l), lead (2 ug/l), thallium (3 ug/l), and zinc (22 ug/l). Phosphorous, sulfide, and sulfite were non-detect. Detected chemical parameters include nitrate-nitrite (640 ug/l), nitrogen (222 ug/l), sulfate (2767 ug/l), surfactants (92 ug/l), and total phenols (44 ug/l). *(NFC Environmental*

Inspection Report March 2002)

Sediment:
Three sediment samples collected from the Brokenstraw Creek for VOCs. SVOCs, inorganics and PCBs indicate no exceedances for constituents of concernt. VOCs were detected in only one sediment sample. Detected VOCs were dichloroethane (0.016 mg/kg), chloroform (0.014 mg/kg), bromodichloromethane (0.01 mg/kg), toluene (0.007 mg/kg), and xylene (0.011 mg/kg). Twelve detected SVOCs had concentrations between 0.00831 mg/kg to 0.38993 mg/kg. TPH and PCBs were not detected in any of the sediment samples. PAH concentrations were below the USEPA Ecotox threshold values. *(NFC Environmental Inspection Report March 2002)*

Surface Soil (<2 ft.):
Contaminated soil was detected during the closure of several Solid Waste Management Units (SWMUs) and Areas of Concerns (AOC). The soil was excavated and disposed of offsite. The excavated areas were backfill with clean soil. *(NFC Environmental Inspection Report March 2002)*

Subsurface Soil (>2 ft.):
The EAF Dust Landfill contains wastes from the electric arc furnace operations. In 1990, NFC closed the landfill with wastes in place and capped the landfill with a synthetic/vegetative cover. As part of the post closure, NFC installed monitoring wells upgradient and downgradient to monitor groundwater quality for total organic carbon (TOC), total halides (TOX), pH, specific conductance, lead, and chromium.

In addition to the EAF Dust landfill, NFC is in the process of closing the Slag Landfill under PADEP's supervision. The landfill consists of slag waste, scale, brick, and spent steel shot. As part of the closure, NFC has authorized ARC Steel Inc. to reclaim the slag waste and related metallic residue wastes for recycling purposes. In addition, NFC has installed monitoring wells in the vicinity of the landfill to monitor groundwater quality. The landfill closure is ongoing and will continue until NFC has completed all requirements under the PADEP's Closure Permit. *(NFC Environmental Inspection Report March 2002)*

Air (outdoors):
Presently, NFC is in compliance with the PADEP Air Permits. In the past there have been minor violations to the permits which have since been corrected. The NFC facility operations do not pose human health risks via air emissions. *(NFC Environmental Inspection Report March 2002)*

Air (indoors):
There has been no record of releases that are above protective risk-based "levels" by the facility. The onsite groundwater plume is located within the facility property line and consists primarily of polynuclear aromatic hydrocarbons (PAHs), acenaphthene, anthracene, fluorene, phenanthrene, and pyrene. The levels in groundwater meet Pennsylvania Act 2 non-residential Statewide Health Standard and Site-specific Standard. Therefore, there are no indoor air concerns associated with the groundwater plume. *(NFC Environmental Inspection Report March 2002)*

Footnotes:
[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table
Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	No			No
~~Air (indoors)~~	___	___	___				
~~Soil (surface, e.g., <2 ft)~~	___	___	___	___	___	___	___
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
Soil (subsurface e.g., >2 ft)				No			No
~~Air (outdoors)~~	___	___	___	___	___		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):
Groundwater: The onsite groundwater plume is within the facility property line. The nearest residential wells are located upgradient from the groundwater plume. The groundwater plume does not present a pathway to potential human receptors and therefore, does not pose a human health risk. *(NFC Environmental Inspection Report March 2002)*

Subsurface Soil (>2 ft.): As part of the closure of the EAF Dust Landfill, wastes were left in place and capped with a synthetic/vegetative cover. Therefore, the pathway to human receptors is eliminated. The closure of the Slag Landfill is ongoing. The landfill will be capped and will meet the requirements under the PADEP's Closure Permit. *(NFC Environmental Inspection Report March 2002)*

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **National Forge Company** facility, EPA ID # **PAD 002 101 418**, located at **Route 6, Irvine, Pennsylvania 16329** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) /s/ Date 4/19/04
(print)
(title)

Supervisor (signature) /s/ Date 4/19/04
(print)
(title)
(EPA Region or State)

Locations where References may be found:

PADEP
Waste Management Program
230 Chestnut Street
Meadville, PA 16335

U.S. EPA
RCRA Corrective Action
1650 Arch Street
Philadelphia, PA 1910

Contact telephone and e-mail numbers:

PADEP Contact: Sigma C. Toth
814-332-6843
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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.